the same limestone formation, and was surprised to find evidence in its construction, of very broad and regular anticlinals with opposite dips: the whole limestone series measuring more than 3000 feet; a measurement corresponding very well with that of the limestones in York Co.

Prof. Prime said that he could not obtain more than 2000 feet of limestones in the Lehigh region.

Prof. Houston described some improvements which he and Prof. Thomson had been making in the form of the telephone.

Pending nominations Nos. 852 to 856 were read and balloted for, and No. 857, and new nominations Nos. 858 to 863 were read.

On motion of Dr. LeConte, the consideration of Prof. Cope's resolution was again postponed, on account of his absence.

The ballot boxes being scrutinized by the presiding officer, the following persons were declared to be duly elected members of the Society:

852. C. Newlin Peirce, D.D.S., Philadelphia.

853. Rob't H. Alison, M. D., of Philadelphia.

854. Wm. D. Marks, Prof. Mech. Eng., Univ., Pa.

855. Lewis M. Haupt, Prof. Civ. Eng., Univ., Pa.

856. Burt G. Wilder, Prof. Anatomy and Zoology, Cornell University at Ithaca, N. Y.

And the meeting was adjourned.

Stated Meeting, May 17th, 1878.

Present, 17 members.

Vice-President, Mr. Fraley, in the chair.

Dr. Wormly, Prof. Marks and Dr. Alison, newly-elected members, were introduced to the presiding officer and took their seats.

Letters accepting membership were received from Mr. An-

drew Sherwood, dated Mansfield, Pa., May 4, 1878; Prof. Wm. D. Marks, dated Univ. Pa., May 7, 1878; Prof. Lewis M. Haupt, dated Univ. Pa., May 7, 1878; Dr. Robt. H. Alison, dated 250 S. 17th street, Philadelphia, May 8; Dr. C. Newlin Peirce, dated Philadelphia, May 8, 1878; and Prof. Burt G. Wilder, dated Ithaca, N. Y., May 9, 1878.

Acknowledgments of the receipt of diplomas of membership were received from the Hon. Craig Biddle, Mr. Edward Penington, Mr. H. Armitt Brown, Prof. Thos. M. Drown, Mr. John F. Carll, Prof. J. L. Campbell, Hon. M. Russell Thayer, Mr. C. V. Riley, Mr. Samuel R. Langley, Mr. Gideon E. Moore, Mr. I. H. McQuillen, Prof. C. F. Brackett, Dr. Wm. Goodell, Mr. Chas. E. Hall, Mr. A. R. Grote, Prof. T. F. Crane, Prof. H. T. Eddy, Mr. Andrew Sherwood, Mr. J. M. Hart and Mr. John McArthur.

Acknowledgments of the receipt of numbers of the Proceedings were received from Prof. L. Rütimeyer, dated Basel, February 5, 1878 (99); the Lit. and Phil. Society of Liverpool, Jan. 31 (99); the Smithsonian Institution, April 3 (100); the McGill University, May 6 (100); and the New Bedford Library, May 11 (100).

Envoys were received from the Societies at Nuremberg, Göttingen and Liverpool; the Academies at Vienna and Rome, and the Department of the Interior at Washington.

A letter of thanks to the Society for the planting of trees on the University grounds, was received from Mr. Cadwallader Biddle, Secretary of the Board of Trustees of the University of Pennsylvania, dated May 8, 1878.

Donations for the Library were received from the Horticultural Society at St. Petersburg (Acta Horti); the Academies at Vienna, Berlin, and Rome; the Societies at Göttingen, Nuremberg and Liverpool; the Revue Politique and London Nature: the editors of the Revista Euskara at Pamplona; Victoria Institute and John J. Bigsby of London; Geological Society at Glasgow; Edinburgh Observatory; Boston Natural History Society; Dr. J. S. Newberry; New Jersey Historical Society; Penn Monthly, Medical News, Journal of

Pharmacy, Franklin Institute, Zoological Society, and Prof. E. D. Cope, of Philadelphia; U. S. Department of the Interior; University of Virginia; Botanical Gazette; Davenport Academy of Natural Science, and the Commissioners of the Argentine Republic at the Centennial Exhibition of 1876.

The death of Prof. Joseph Henry, Secretary of the Smithsonian Institution, at Washington, May 13th, 1878, aged 81 years, was announced with appropriate remarks by Mr. Fraley.

Mr. Roberts added his reminiscences of Mr. Henry at the meeting of the British Association at Liverpool, in 1837, and described a characteristic scene between him and Dr. Dio. Lardner, and the cordial reception of Mr. Henry, by the distinguished members of the Association then present; the commencement of many warm and lasting and honorable friendships.

On motion Mr. Fairman Rogers was appointed to prepare an obituary notice of the deceased.

The death of Mr. Robert Frazer, at Philadelphia, May 4th, 1878, aged years, was announced by the Secretary.

On motion Mr. Persifor Frazer, Jr., was appointed to read an obituary notice of the deceased.

A letter to the Secretary respecting an extract from a paper on Gas Analysis, by Prof. Sadtler, published in the Proceedings under date of April 6th, 1878, was received from Prof. Henry Morton, dated Hoboken, N. J.

May 15, 1878.

To the Secretary American Philosophical Society.

Dear Sir:—In a printed copy of a paper "On the calculation of Results in Gas-Analyses," read before the American Philosophical Society, April 5, 1878, by Professor Samuel P. Sadtler, which I have just received, I find the following statement:

"In a private letter to Professor Morton, dated December 31st last, in answer to one received from him a day or two before, calling my attention to the error, I acknowledged the error of the formula used by me in my printed paper, and mentioned that I was proposing to rectify the result as first published by the aid of other tests."

Professor Sadtler is here no doubt quoting from memory, and does not intend to state what is not true, but as the statement is not only incorrect, but by reason of its inaccuracy casts a reflection upon me, I feel bound to call for a correction. Professor Sadtler's letter of December 31st is now before me, and the only passage having any reference to the matter reads as follows :

"About the formulæ, I am sorry that my first mistake still stands on record uncorrected. I had copied the formulæ I first used from Foucou's article on analyses of 'Pennsylvania Natural Gases' in Comptes Rendus, and in my second lot of analyses made for the Survey, I corrected it, and corrected the first lot at the same time." This includes every word which this letter contains on the matter referred to, and while it may be that Professor Sadtler at the time of writing knew all about the matter, there was certainly nothing whatever to imply that such was the case in what he here states. On the contrary, when it is known that Foucou's article, in the Comptes Rendus referred to, contains *no formulæ whatever*, and that no *correction* of analyses was possible for the simple reason that the correction of the error showed *any analysis* to be impossible except by discovering a new method, it will appear that I had good cause to believe that Professor Sadtler was entirely in the dark upon the subject.

As to the assertion that he said in this letter "that (he) I was proposing to rectify the results as first published by the aid of other tests," it is simply a lapse of memory on his part, as nothing of the sort exists in the letter.

In a memoir by Fouqué (not Foucou), immediately following that of Foucou in the Comptes Rendus, we *do* find formulæ in some sort resembling those used by Professor Sadtler, but *not* containing his error. Fouqué's formulæ are in fact perfectly correct, and so are his results, his only fault lay in failing to perceive that hydrogen might be regarded as a lower member of the marsh-gas series,* and thus find a place in his general equation.

Yours respectfully,

HENRY MORTON.

Prof. Sadtler, to whom the letter had been shown previous to the meeting, read a written reply to Prof. Morton's statements.

In the letter from Professor Morton just read before the Society, he quotes from my paper read here on April 5th, the paragraph relating to the correspondence which passed between us about December 31st last, and supposes that I was quoting from memory. This is certainly true. I had not copied the letter, as it was regarded by me so entirely one of friendly correspondence, that I deemed such a step unnecessary. My recollection of

* As was first pointed out by Mr. Wm. E. Geyer and myself in our paper in the Gas-Light Journal, February 16th.

my words must therefore have been an incorrect one when I supposed that with my acknowledgment of the error I mentioned the test proposed by me in September last here before the Society. I certainly have been under the impression that I alluded to them in writing to him at that time. In this point then, I have done Professor Morton an injustice. I must still rely on my recollection of what I wrote in that letter, but I do not think I alluded to Foucou's article at all in writing to him. I think, if Professor Morton would look at my letter again, he will see that I alluded to Fouqué's article. It would have been absurd for me to have appealed to Foucou's article as that was a geological one, and dealt only with the matter of the occurrence of these natural gases. The article of Fouqué, which follows it in the Comptes Rendus, on the other hand speaks of the analysis of these gases, and gives equations for such analysis. So what Professor Morton says in italics, viz.: that the article of Foucou referred to "contained *no formulæ whatever*," is true, but has no bearing upon the question at issue. I have alluded in every paper which I have published on this matter, including those in Professor Morton's hands at the time of his first writing, to Fouqué's formulas and his article, found in Comptes Rendus, Vol. 87, p. 1048, and not to Foucou's article, found just before it on page 1041. In my last paper, read here on April 5th, I quote Fouqué's language on the subject just as it appears in the original French, and I think the words are capable of but one interpretation, viz.: that which I gave them. That Fouqué was in error, and that I fell originally into the same error, does not make me guilty of a willful prevarication in this matter of quoting Fouqué.

Professor Morton says that "Fouqué's formulæ are in fact perfectly correct, and so are his results, his only fault lay in failing to perceive that hydrogen might be regarded as a lower member of the marsh-gas series, and thus find a place in his general equation."

Professor Morton, in calling attention to my errors, seems to me to be willing to let Fouqué off much too easily. His fault is greater than that here indicated. Fouqué literally translated says, "a mixture of these carbides with free hydrogen *prevents* this condition from being realized. It is therefore easy to recognize if a mixture of gaseous hydrocarbons consist exclusively of carbides of the formula $C^n H^{2n+2}$." He therefore not only "fails to perceive that hydrogen *might* be regarded as a lower member of the marsh-gas series," to use Professor Morton's words, but says distinctly that its presence interferes with the realization of an equation characteristic of the marsh-gas hydrocarbons as a series.

I have no desire to shield myself behind Fouqué's faults, but I wish to be given credit for a faithful interpretation of his language, and for a willingness to acknowledge my errors when they are pointed out.

The Secretary exhibited by permission of Mr. Lorenz, Chief Engineer of the Reading R. R., the stone slab from the Ellengowan Colliery shaft, bearing the Batrachian foot-

prints mentioned at the last meeting, and referred again to the letter of Mr. Mason, its discoverer. Mr. Lesley stated that he understood Mr. Lorenz to wish to propose for it the name Anthracopes Masoni, provisionally, until the discovery of other foot-prints or remains of the animal, should give occasion for a better determination of genus or species.

Mr. Frazer exhibited what is perhaps the first perfectly successful electrotype of a piece of a phonograph ribbon, made by Mr. Edison.

Mr. Frazer described ripple-marks on a slab of limestone from the Siluro-Cambrian region of Lancaster county, and Prof. Prim added that such ripple-marks entirely cover the exposed surfaces in the Euhlersville Quarry, in Northampton County; these beds being also of Calciferus sandstone age.

Mr. Frazer then drew attention to the great significance and geological importance of his recent discovery of an immense anticlinal, crossing Lancaster county, and probably traversing York county into Maryland. He called it the "Martic" anticlinal, and showed how it exposed fundamental gneiss and granitoid beds in the new railroad cuttings along the left bank of the Susquehanna river; how it sheds off to the north and to the south at least 16,000 feet of primal (Cambrian?) slates; and how its eastern prolongation, would cross Lancaster country into Chester county, where the uplift seems to be represented by the fundamental gneiss series of the Welsh Mountain.

The minutes of the last meeting of the Board of Officers and Council were read.

Pending nominations Nos. 857 to 863, and new nominations Nos. 864 to 869 were read.

Prof. Cope called up his motion of April 5th, which after discussion, was, on motion of Mr. Lesley, indefinitely postponed.

And the meeting was adjourned.